

TCT_{Mobile}

Service manual

U9C-CAM FM A/OT-360A

U9C-CAM FM BT/OT-363(A)

We bring camera experience at voice-only clamshell price
Camera for free

- 1 Products presentation
- 2 Maintenance guide



Note: this manual is non-contractual and TCT Mobile Phone can modify without prior notice the characteristics of described equipments.

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	Function	Name	Date	Signature
Written by	CPM	Sherry		
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Chapter 1

Products presentation

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CHAPTER 1

PRODUCTS PRESENTATION

1.1 - GENERAL

U9C-CAM Clamshell phone, MTK 6223C platform, it targets at the young people who needs a basic camera phone with affordable price on the entry clamshell segment. OT-360A supports only US band which in the 850/1900 MHz OT-363(A) supports both 900/1800 MHz for EU band and 850/1900 MHz for US band.

Key drivers:

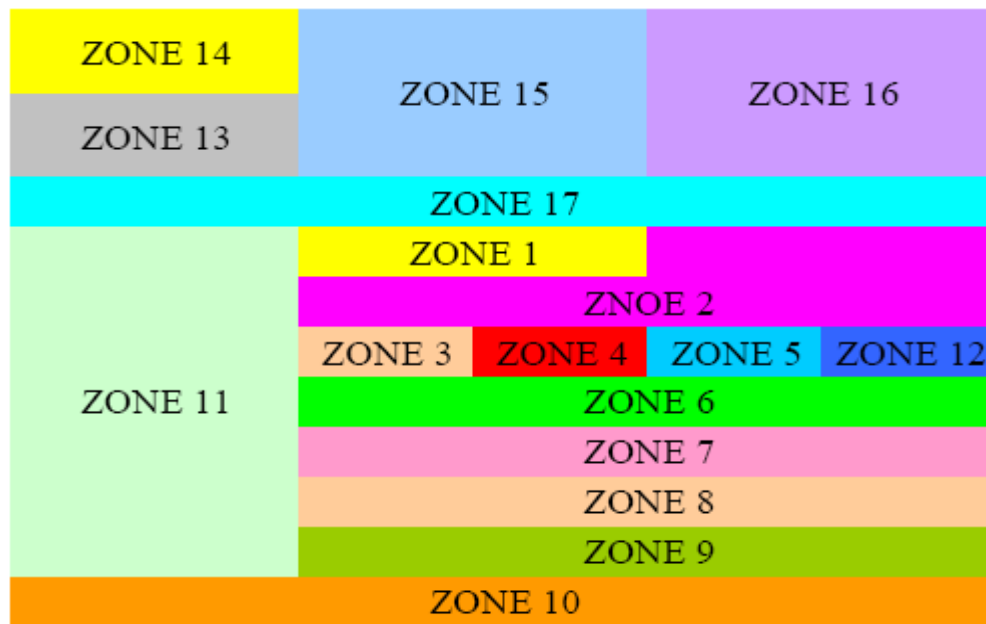
	U9C-CAM
Network	2G-GPRS
GPRS Class	10
FM or DAB radio	FM radio(incl.RDS)
Navigation	5 ways navigation(4+ centre click)
Form-Factor	Clamshell
Dimensions XxYxZ (mm)	90.5*44.5*19.6
Main Display Resolution	QQVGA(128x160)
Main Display Technology	CSTN
Main Display colors	65k
Main Display Dimention	1.75
Main Display Orientation	Portrait
Audio codec	MP3 & Midi
Ringtone	MP3 ringtone optional
Video	No
Main Camera	VGA (640x480)
MMS support	MMS 1.2
Unified box	yes
USB	USB1.1 with power
Total internal user available memory size (MB)	2MB
Memory card support	No
Phone book support terms	Mobile phone number Office number Home number Email Fax Birthday
Hands free(loudspeaker)	Yes
WAP	2.0
Embedded games	No

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1.2 - PORTABLE STICKERS

Labels are located on the back of the cellphone.



U9C-Cam FM BT U9C-Cam FM
 EU IMEI 35967502*****
 US IMEI 01184600***** 01184000*****

FCC ID number	Product name	Product type (and internal name)	Label information
RAD105	OT-363A	U9C-Cam FM BT A	Length = 33mm
RAD104	OT-360A	U9C-Cam FM A	Width = 19mm
			Thickness = 0.05mm

Figure 1.1 - PORTABLE STICKERS

The formation on the identification sticker is:

Zone	Variable	Signification
1	-	Type of product : XXXX
2	-	Distributor : For WW: TCT Mobile limited For CN: 苏州 TCL 天一移动通信有限公司 GSM 双频 GPRS 功能数字移动电话机
3	DATA3	PTS='soft' techn. Release xxx
4	DATA10 or DATA 12	Short code XXXX
5	DATA2	PTM
6	-	Made In (by) ... according to made in file
7	-	China version— CMII:0000000000 / PCS version— FCC ID:RADXXX
8	DATA7	Commercial Ref
9	DATA5	Full IMEI
10	DATA5	Bar code IMEI
11	DATA5/DATA11/DATA2/DATA3/DATA7	DATAMATRIX Code IMEI No. / INDUS. REF. / PTH(PTM) / PTS / COM. REF.
12	DATA4	Date Code xxx
13	-	Special Logo
14	-	
15	-	
16	-	
17		Remarker (Bluetooth QD ID B013793)
NO	DATA11	3DS (INDUS REF)

1.3 - EXPLODED VIEW

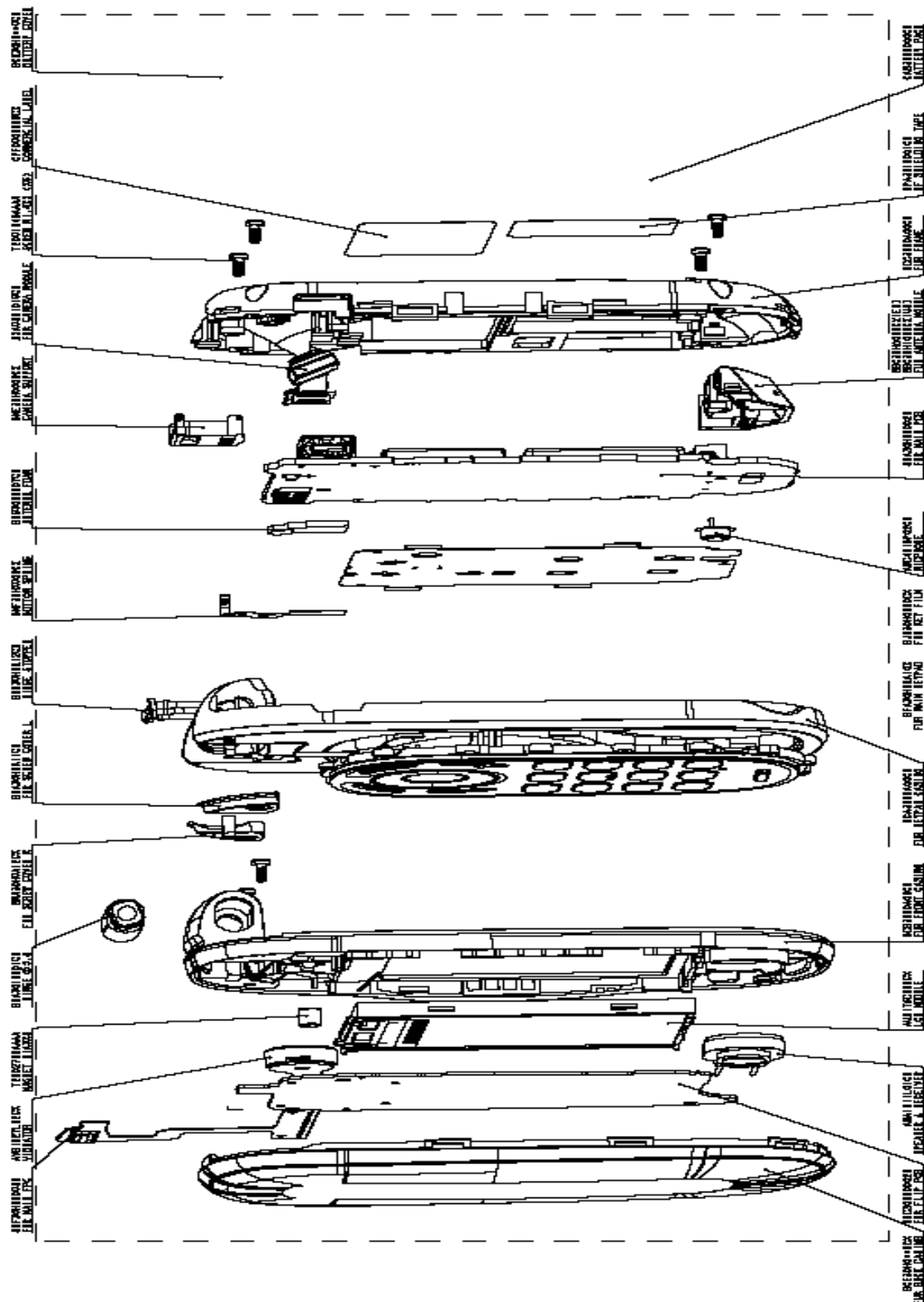


Figure 1.2 - EXPLODED VIEW

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1.4 - RADIO SPECIFICATIONS& LANGUAGE SPECIFICATION

1.4.1 OT-363 RADIO SPECIFICATION

	EGSM channel	DCS channel
Transmission frequency band	880-915 MHz	1710-1785 MHz
Reception frequency band	925-960 MHz	1805-1880 MHz
Duplex spacing	45 MHz	95 MHz
Channels spacing	200 kHz	200 Khz
Number of channels	174	374
Type of operation	Temporal multiplexage AMRT. Each radio channel is time shared by Frame of 8 period of time.	
Time slot duration	577 μ s	577 μ s
Type of modulation	GMSK	GMSK
Reception specifications		
Sensibility treshold	-102 dBm sur 50 $\square$	-102 dBm sur 50 $\square$
Maximum useful signal power applicable to the antenna	-10 dBm	- 10 dBm
Transmission specifications		
Class	IV GSM	I DCS
Maximum power on 50 ohms	2 W (+ 33 dBm $\pm$ 2)	1W (+ 30 dBm $\pm$ 2)
Number of power levels	15	16
Pitch between two levels	2 dB	2 dB

1.4.2 OT-360A/363A RADIO SPECIFICATIONS

	PCS channel	850MHz channel
Transmission frequency band	1850-1910 MHz	825-849 MHz
Reception frequency band	1930-1990 MHz	870-894 MHz
Duplex spacing	80 MHz	45 MHz
Channels spacing	200 kHz	200 KHz
Number of channels	299	124
Type of operation	Temporal multiplexage AMRT. Each radio channel is time shared by Frame of 8 period of time.	
Time slot duration	577 μ s	577 μ s
Type of modulation	GMSK	GMSK
Reception specifications		
Sensibility treshold	-102 dBm sur 50 $\square$	-102 dBm sur 50 $\square$
Maximum useful signal power applicable to the antenna	-10 dBm	- 10 dBm
Transmission specifications		
Class	I PCS	IV GSM
Maximum power on 50 ohms	1 W (+ 30 dBm $\pm$ 2)	1W (+ 30 dBm $\pm$ 2)
Number of power levels	16	16
Pitch between two levels	2 dB	2 dB

1.4.3 – LANGUAGE SPECIFICATION

U9C-CAM cellphones are customized in the language (if available) of the country of destination.

It comprises one resident language (English) plus, possibly, one of the following groups of extra languages (from 1 to 4 languages) depending on the country of destination:

Group	Content	Comment
G00	English	Present in all Group

No	Group	Language Content	Associated Country	U9C-CAM-CAM FM	U9C-CAM-CAM BT FM
1	G01	German, Italian, French, Spanish	UK, France, Italy, New Zealand, FIJI, Morocco		P1
2	G02	German, Portuguese, Spanish, French	Portugal, African countries *		P2
3	G03	Dutch, German, Turkish, French	Germany, Austria		P1
4	G04	Galician, Spanish, Basque, Catalan	Spain		P1
5	G05	Romanian, Italian, German, Hungarian	Romania, Hungary		P1
6	G06	Albanian, Bulgarian, Serbian, Turkish	Bulgaria		P1
7	G07	Spanish, Brazilian Portuguese, Italian, French	Brazil, Mexico, Argentina, Columbia, Chile, Peru, Panama, Nicaragua, Comcel, Guatemala, El Salvador, Honduras	P1	P1
7-1	G07 T	Telefonica Spanish, Brazilian Portuguese, Italian, French	Brazil, Mexico, Argentina, Columbia, Chile, Peru, Panama, Nicaragua, Comcel, Guatemala, El Salvador, Honduras	P1	P1
8	G08	German, Polish, Czech, Slovakian	Poland, Slovakia		P2
9	G09	Danish, Norwegian, Swedish	Denmark, Norway, Sweden		P2
10	G0B	German, Croatian, Slovenian, Latin Serbian	Croatia, Slovenia, Serbia, Montenegro		P2
11	G0J	American English, Spanish, Italian, French	USA, Canada		P2
12	G11	Simplified Chinese, Traditional Chinese	China, Hong Kong		P2
13	G12	Arabic, French, Turkish	North Africa *, Middle East *, Afghanistan		P1

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14	G13	German, Russian, Ukrainian, English	Russia, Ukraine, Kazakhstan, Azerbaijan, Byelorussia		P1
15	G15	Malaysian, Bahasa Indonesian, Simplified Chinese	Malaysia, Indonesia		P2
16	G16	Estonian, Latvian, Lithuanian, Russian	Estonia, Latvia, Lithuania		P2
17	G17	Thai, Simplified Chinese	Thailand		P2
18	G18	Macedonian, Albanian, Serbian, Bulgarian	Macedonia		P1
19	G19	Simplified Chinese, Vietnamese	Vietnam		P2
20	G20	French, Romanian, Polish, Simplified Chinese	Ireland Vodafone		P2
21	G21	Russian, Albanian, Greek, Bulgarian	Albania, Greece, Cyprus		P2
22	G22	Polish, Russian, Romanian	Poland (Avon)		P2
23	G23	French, Italian, Portuguese, Spanish	African countries (Orange Export)		P2
24	G24	Hungarian, Slovakian, Czech, Romanian, English	Czech/Slovakia/Hungary specific customers		P2
25	G25	Hindi, English	India		P2
26	G26	Hebrew, Arabic, Russian,	Israel		P2
27	G27	Romanian, Russian, Italian, French	Moldavia		P2
28	G28	Slovenian, Croatian, Albanian and German	Slovenia, Croatia, Albania and Kosovo		P2
29	G29	Traditional Chinese with Bopomofo and Stroke input methods	Taiwan		P2
30	G30	Farsi, French, Turkish	Iran		P2
31	G31	FR/Malagasy/Spanish/Portuguese	Madagascar		P2
32	G32	Polish, Czech, German and Russian	Poland, Czech Republic		P2
33	G33	Dutch, German, Polish, French	Netherlands, Germany		P1
34	G34	Polish, German, French, Russia	Poland		P2
35	G35	Malagasy, French, German and Italian	Madagascar		P2

Arabic: mandatory to support auto sequencing by letter when searching in contact information.

China: input Pinyin (default) + Stroke / simplified Chinese by default

Hongkong: input Stroke (default) + Pinyin / traditional Chinese by default

Taiwan: input Bopomofo (default) + Stroke / traditional Chinese

Malaysia: switch on English, input Latin (default) + Pinyin only

Basque, Catalan, Galician, since T9 doesn't support such languages, We use Spanish for Basque and Galician, (Macedonian T9 support will be released end of June 2006).

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1.5 - ACCESSORIES

1.5.1 - BATTERY



Figure 1.3 - PRESENTATION OF THE BATTERY (Lithium 650 mAh)

The battery has the following features:

Battery model	Technology	Capacity
Battery Li	Lithium	650 mAh

Table 1.1- BATTERY FEATURES

Table 1.2 shows the rated ranges for U9C-CAM cellphone in standby, in talking modes and MP3/video playing time (in flight mode). These typical values are expressed in normal temperature conditions with batteries initially charged and under good ratio coverage.

Battery range depends on the network characteristics, the ambient temperature and particularly on movements that cause cell changes.

Mode	U9C-CAM		
	Standby (paging 5)	Talking(with Pmin*+50%DTX**)	MP3/video playing time
Power pack Lithium	350Hours	6 Hours	N/A

* Pmin: minimum transmission power

** DTX: no transmission during period of silence

Table 1.2 - BATTERY RATED RANGES

For a normally discharged battery (which has not been stored), the charge/discharge time are those indicated in table 1.3

Mode	Typical Charge time
------	------------------------

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Power pack Lithium	Less than 2.5 hours
-----------------------	---------------------

Table 1.3 - TYPICAL CHARGE TIME

Precautions when using and storing batteries:

If your battery is brand new, recharge it before use: the icon will then appear after a short while.

If the battery is deeply discharged, the battery charge indicator can take several minutes to appear and accompanied by a slight sound.

1.5.2 - CHARGERS

The power supply is a **current generator**.

It includes an electrical part: AC to DC conversion based on a switch regulation, which must be connected to an indoor plug.

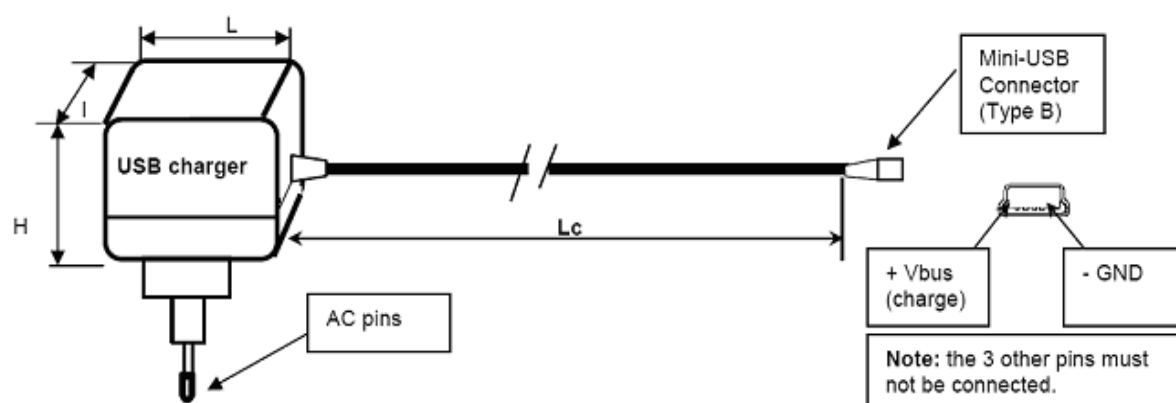


Figure 1.4 – DESCRIPTION TO THE CHARGER

Mechanical dimensions

$L \times l \times H = 63.4\text{mm} \times 38.5\text{mm} \times 24\text{mm}$ / Upon JRDC approval

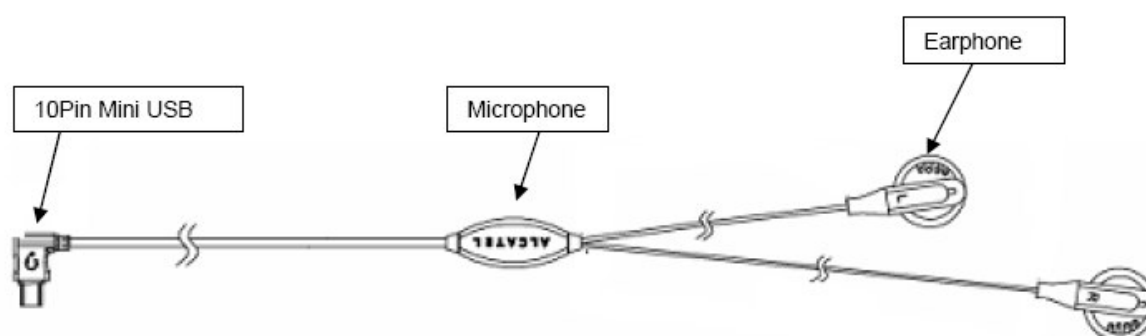
$L_c = 1.5\text{m} \pm 0.1\text{m}$

Maximum Weight (total): 54g / Upon JRDC approval



Figure 1.5 - USB CHARGER

1.5.3 - COST DOWN STEREO HEADSET



Microphone	Earphone
Electret condenser Microphone (without preamplifier)	Sound pressure level (1mW): $\approx 105 \pm 5$ dB SPL (94 dB SPL= 1 dB Pa) at 1kHz with $V_{\text{input}} = 0.179$ V rms
Sensitivity: ≈ -40 dBV/Pa ± 4 dB at 1kHz	Maximum input power: 5mW
Current consumption: ≤ 0.5 mA	Impedance: $32\Omega \pm 15\%$
Signal/noise ratio: ≈ 50 dB	Resonant frequency: 20-20KHz
DC voltage V_{micro} range: 0.35-1.1V	Burst demodulation noise: < -45 dBpa



Figure 1.6 – COST DOWN STEREO HEADSET

Chapter 2

Maintenance guide

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CHAPTER 2

MAINTENANCE GUIDE

2.1 - MAINTENANCE POLICY

This chapter describes the maintenance of the U9C-CAM cellphone authorized at L1 repair centers. The maintenance operations can only be performed in approved repair centers.

2.2 - GENERAL

Main L1 maintenance operations are as followings:

Warranty inspections:

- Data code or invoice check
- Humidity stick check
- Anti-demolition stick check

Faults confirmation:

- Reproduce the faults as end user describes, to avoid any NFF or fault by end user mis-operation

Swap the Handset:

- Standard replacement of cell phones and take back the defect handset.

Accessories replacing:

- Check the battery and charger
- Check the headset
- Check the other accessories which are in warranty
- Exchange of defective accessories which are in warranty.

For hands-free vehicle kit:

- Functional check on it,
- Mechanical and electrical installation checks,

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- Replacement of defective accessories in warranty.

Final test:

- Switch on the mobile
- Insert a SIM card to test in/out going call
- Test the vibration function
- Cosmetic check

Send the faulty handsets to upper level RC with a dedicated form to describe the form.

If you input the following codes to cellphones, you can:

- Display the software version and IMEI number in each phone: ***#06#**
- Reset all users parameter and data: ***#73738#**
- Unlock the phone in case the lock function has been activated and the code lost(called Super code): **11223344**
- Access call duration directly(called DAP code): **###232#**
- Test SW version: ***#837#**

WARNING:

- 1 - All user personal data will be lost after entering the code ***#73738#**, except information in SIM card. This includes: pictures, sounds, downloaded applications and games, products directory data, WAP bookmark ... added by the user. This may also delete some of the original pictures/sounds/game provided within the phone. You can save and restore the data by using the Cloning software.
- 2 - After the sequence has been entered, phone auto switch on will take approx. 60 sec. Never manipulate the phone during this period of time.

2.3 - CELLPHONE MAINTENANCE

2.3.1 - REQUIRED TOOLS

Cellphone testing requires:

- A charged battery,
- A functional micro-SIM card.

We recommend the following tools:

- A PC with OS(Windows 2000/NT/XP),
- A multimeter for battery test,
- A galvanometry meter for charger measurement,

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- A suit of screw driver.

2.3.2 - HUMIDITY STICKER CHECK

U9C-CAM cellphones are fitted with a sticker detecting liquid (on the frame). The sticker contains a detective colored bar which will become obscure once under humid condition, as the picture on the right showed:



Figure 2.1 - HUMIDITY STICKER

If a cellphone is sent to the repair center with an obscure bar or the bar is missing, that means the cellphone is out of guarantee.

2.3.3 - CELLPHONE MAINTENANCE PROCEDURE

- Check that the SIM card is set correctly
- Insert the end-user battery.
- Press the Switch on button until the website message appears.
- If the cellphone can not be power on, visually check the condition of the battery connector and replace the battery if necessary (see paragraph 2.4 for battery test).
- If the cellphone asks to insert the micro-SIM card, visually check the card and connector and try another SIM card to make sure which part fail.
- Enter the phone code if necessary.
- If power on OK, test the keypad, and each function under each menu.
- Make a call.
- Receive a call.
- If the phone is considered as faulty, upgrade the software (without forgetting to save customer information first - see paragraph 2.6).

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2.3.4 - REPLACING CELLPHONE PARTS

2.3.4.1- PRELIMINARY

Before any sub-assembly removal, the battery cover, the battery must be removed. The following diagrams are shows the different stage to realize these operations.



Figure 2.2 – removing the battery cover

2.3.4.2 - PRECAUTIONS

The heart of the cellphone, containing all the digital circuit (microprocessor, ASIC, memories, display, keypad, etc) and the high-frequency transceiver circuit, is protected by the upper and lower shells.

However, certain areas sensitive to electrostatic discharges are completely or partially visible (keypad keys, micro-SIM drive, etc) and in order to prevent any risk of damage during removal/installation of the shell, the operator's wrist should be grounded when working on the heart of the phone.

This operation is illustrated in the following figure. The operator wears a

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conducting bracelet connected to an anti-static pad placed on the work surface, itself connected to the workbench metal structure, the whole being earthed.

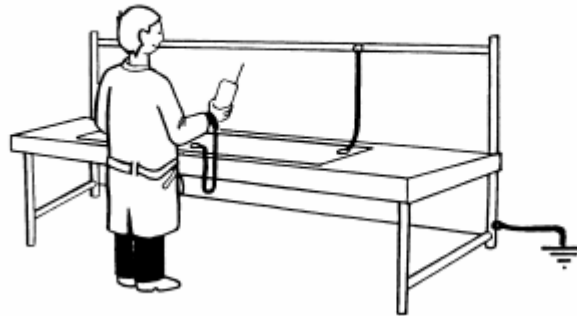


Figure 2.3 - PROTECTION AGAINST ELECTROSTATIC DISCHARGES

2.3.5 – EXPERIENCED FAULTY COMPONENTS LIST

Several L1+ repair service Hubs may have authorizations to have hardware repair of replacing the faulty components (including the parts which can only be repaired without soldering iron or some primary faulty parts), Based on pre-alpha and alpha test feedback, for this project, we have potential risk of faulty camera to be returned for repairing. Below is the figure of camera position.

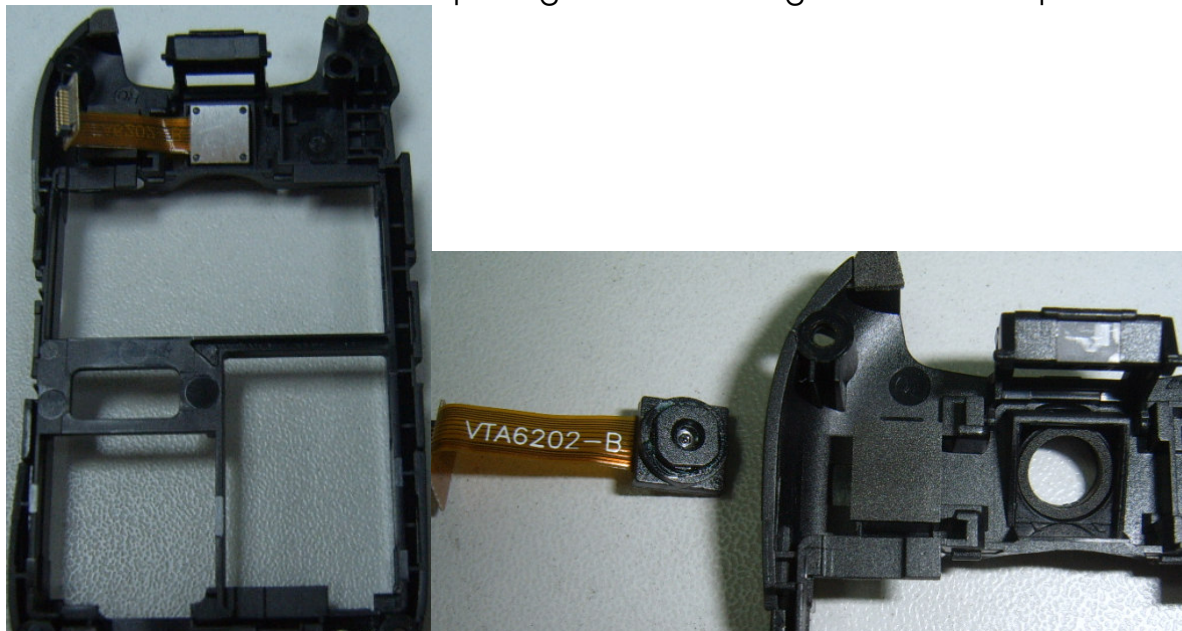


Figure 2.4 – EXPERIENCED FAULTY CAMERA

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2.4 - BATTERY TEST

2.4.1 - CHARGING PROCESS

Table 2.1 describes the various events related to connection of a standard charger connected to a cellphone.

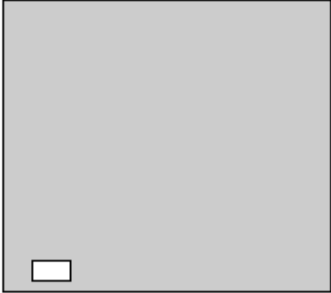
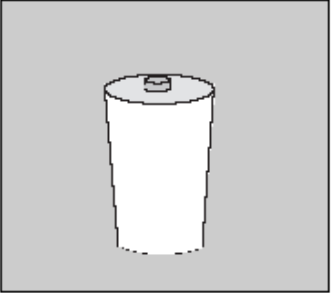
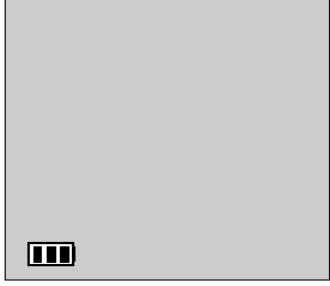
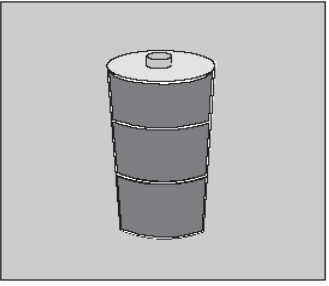
	U9C-CAM	
Cellphone status before charger connection	ON	OFF
During charging	Display lights up and following battery icon displayed:	
		
	Sequential icon flashing:	
		
After charging (charger connected)	Following fixed battery icon display :	
		

Table 2.1 - BATTERY CHARGE STATUS ON THE CELLPHONE

The charger or the cellphone's charge function is defective (connectors or electronics) if the display does not light or the icons do not flash.

In this case, try to charge the battery on the cellphone with another charger.

If the charge process runs correctly, replace the charger. If it does not work, try to charge with another battery. If the charge process runs correctly, replace the battery. Check the Audio/Charge connector. If it is damaged, replace the cellphone.

For a normally discharged battery (with not a long time of stocking),

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charging time is indicated on table 2.2.

Battery \ Mode	Typical Charge time
Lithium	Less than 3 hours

Table 2.2 - BATTERY TYPICAL CHARGE TIME

2.4.2 - BATTERY SPECIFICATION (LITHIUM)

Nominal Voltage	3.7V
Capacity	Minimum 650mAh (From 4.20V to 2.75V cut-off at current 0.2C)
Charge Method	CC / CV (Constant Current / Constant Voltage,)
Standard Charge Current	1C
Max Charge Current	1C
Max Recommend charge Voltage	4.225V
Max Discharge Current	1.5C (for continuous discharging mode)
Discharge Cut-off Voltage	2.75V / cell
Operating Temperature:	Charge 0 ~ +45°C Discharge -20 ~ +60°C
Storage Temperature	
1 month	-20 ~ +60°C (*)
3 months	-20 ~ +45°C (*)
1 year	-20 ~ +25°C (*)
Storage Relative Humidity	65±20%
Note (*): Capacity recovery rate should be more than 80% under the shipment status.	

The off-load voltage of a normally discharged battery is greater than 2.5 V. If not, charge the battery during a few minutes and test if the voltage is greater than 3.3 V. If not, at least, the battery is not in good condition; replace it.

After 10 minutes charging of a normally discharged battery, the cellphone can be switched on and the battery will then behave normally: continue the charge process. If not, either the battery or the cellphone charge function is defective. Replace items until the faulty one is identified.

2.5 - TESTING THE CHARGER

When the standard charger is connected to the cellphone, check correct running of the charge sequences on its display (see paragraph 2.4.1).

Use the galvanometric meter to measure the current of the charger.



Figure 2.5 – GALVANOMETRY METER

Connect the power supply, the charger to the meter (on the side of "IN"), and connect the cables from "OUT" side to the handset, you will see how much the current is on the screen.



Figure 2.6 – HOW TO CONNECT THE GALVANOMETRY METER

The measurements at the charger output should be: 450 mA~550 mA

2.6 - USER INFORMATION TRANSFER

Concerning U9C-CAM, the clone tool allows save the customer information for users (directory, notebook...) with a PC and downloading cable.

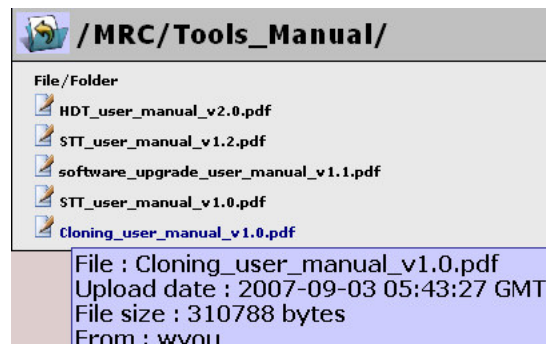
(1) Find cloning tool on MLDC as below detail location:

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- (2) Install the cloning tool in your computer.
- (3) Follow the user manual on MLDC to upgrade the mobile.



2.7 –HARDLOCK IDENTIFICATION RULES

U9C-CAM FM A and U9C-CAM BT FM will be partially implemented hardlock. We decide Use last digit in commercial reference to identify hard lock or not (13th if product commercial name have prefix like "I", "E" for 2007/2008 products, 12th if product commercial do not have prefix for 2009 products)

If this digit is "9" or "8", we define as below.

8- Hardlock

9- Hardlock with co branding

For example

363X-2AALEU1 is not hard lock one.

363X-2AALEU8 is hard lock

363X-2AALEU9 is hard lock with co branding.

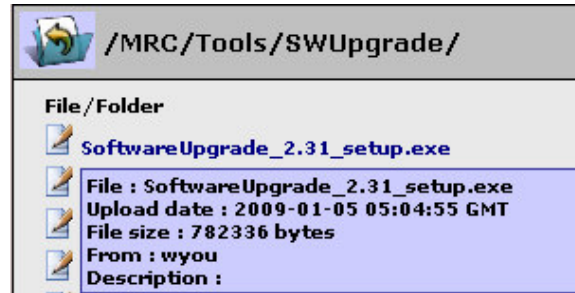
2.8 –SOFTWARE UPGRADE

In level 1 Repair center, we can do software upgrade downloading for the mobile which need software updated. This downloading method is online and with your account.

- (1) Download the SWUpgrade tool form MLDC.

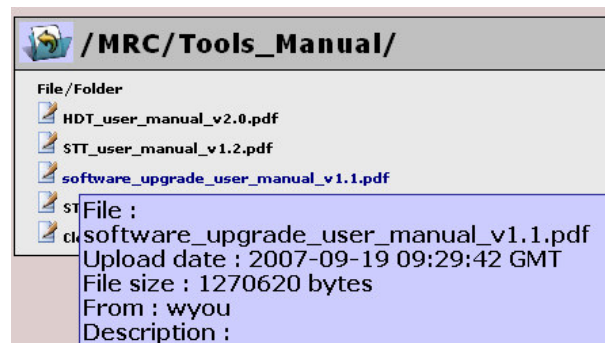
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(2) Install the tool in your computer.

(3) Detail steps for usage pls. refer to the file of "software_upgrade_user_manual_v1.1" on MLDC.



For multi-download, we have verified 4 at one time. And the capacity is about 19 handsets/hour/PC (depend on the internet and PC statement on your site).

Note: When you do multi-download, please close other application programs to save enough memory for the downloading tool. If you meet some error messages, click OK and re-set the battery, then downloading again.

End of the document

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